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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,572	10/17/2000	Michael Seul	464.1006 CON3	3549

7590 08/06/2004
JULIE BOWKER
60 EAST 42ND STREET
SUITE 2918
NEW YORK, NY 10165

EXAMINER

DO, PENSEE T

ART UNIT	PAPER NUMBER
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1641

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/688,572

Applicant(s)

SEUL, MICHAEL

Examiner

Pensee T. Do

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-42 is/are pending in the application.
- 4a) Of the above claim(s) 27-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 15-42 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8, 9, 1, 2
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

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DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of group I, claims 15-26 in the reply filed on October 14, 2003 is acknowledged. However, the traversal is not based on any ground(s). This is not found persuasive because the traversal is not based on any ground.

The requirement is still deemed proper and is therefore made FINAL

Amendment Entry & Claim Status

Claims 15-26 are examined.

Claims 27-42 are withdrawn from further consideration.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 15-22 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4-8, 11, and 17 of U.S.

Patent No. 6,468,811.

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Patent '811 teaches a method of for moving particles suspended at an interface between an electrode and electrolyte solution comprising the following steps:

- providing a first electrode positioned in the first plane, and a second electrode positioned in a second plane different from the first place, an electrolyte solution located therebetween and a plurality of particles suspended in the electrolyte solution, wherein the second electrode comprises a planar electrode having a surface or interior, the surface or interior having been modified to produce spatial modulations in electrochemical properties of the second electrode; and

- generating an electric field at the interface between the electrolyte solution and the second electrode to effect movement of the particles, wherein the movement of the particles at the interface is in accordance with the electric field in combination with the spatial modulations in the properties of the second electrode, said properties affecting the local distribution of the electric field at the interface. (claim 1)

Wherein the electrode is a silicon electrode (claim 4 or 17); wherein the spatial modulations of the properties of the second electrode is carried out by modifying the surface or the interior of the second electrode by spatially modulated oxide growth, surface chemical patterning or surface profiling (claim 5); wherein the first electrode and the second electrode each comprises a planar electrode, said first and second electrodes being parallel to another and separated by a gap, with the electrolyte solution containing the particles being located in the gap (claim 6); wherein the property of the second electrode being modulated comprises impedance, one or more areas of the surface or the interior of the second electrode being modified to exhibit low impedance,

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and wherein the particles move to the areas of low impedance (claim 7); wherein the electric field is generated by applying an AC voltage between the first and the second electrode (claim 8).

However, patent '811 fails to teach a method of forming a planar assembly of particles in a designated area on a substrate.

Since both of the method steps of patent '811 are the same as those of the present invention, the outcome would be the same. Thus, It would have been obvious to one of ordinary skills in the art to arrive at a method for forming a planar assembly of particles in a designated are on a substrate such as an electrode by executing the method steps of patent '811. Since patent '811 teaches that the property of the second electrode being modulated comprises impedance, one or more areas of the surface or interior of the second electrode being modified to exhibit low impedance and that the particles would move to the areas of low impedance, the particles would form a planar assemble at the low impedance surface or interior of the second electrode. Regarding claim 18, if the second electrode of patent '811 comprises the same material such as silicon as that of the present invention, it would have the same property such as interfacial impedance or surface charge density. Furthermore, patent '811 teaches that the second electrode has impedance.

Claims 15-17, 19-26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6,514,771. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are both drawn to a method of forming

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a planar assembly or a method of dynamically assembly an array of particles at an interface between an electrode and an electrolyte solution, the method comprises providing an electrode, an electrolyte solution and interface therebetween; providing a plurality of particles located in said electrolyte solution; generating an electric field at said interface to cause the assembly of an array of particles; the method further comprises the step of maintaining said particles in accordance with said assembly by either maintaining said electric field, chemically linking said particles or confining said particles; and a step of removing said electric field to disassemble the array of particles. Patent '771 also claims an apparatus for assembling an array of particles comprising an electrode, an electrolyte solution, and an interface therebetween, a plurality of particles suspended in said electrolyte solution, wherein the apparatus is configured such that, when an electric field is generated at the interface and the electrode is illuminated with a pre-determined light pattern, the illumination in combination with the generation of the electric field results in a formation of a planar assembly of particles in a designated area of the electrode, the apparatus further comprises a second electrode which is a planar electrode, said electrodes being parallel to each other and separated by a gap, the plurality of particles and the electrolyte solution are located in the gap. The electrode is a silicon electrode.

However, the method of patent '771 differs from the present invention by lacking a second electrode. Furthermore, patent '771 also fails to recite beads as particles.

Although, the method of patent '771 does not comprise a second electrode, the apparatus has a second electrode and the components of the apparatus are the same

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as those of the present invention. With the components taught by the apparatus and the method steps recited in the apparatus claims of patent '771, one of ordinary skills in the art would arrive at the method of present invention since it is an apparatus of assembling an array of particles and has all the necessary components as the those of the present invention. Regarding claim 16, it is well known that particles are beads.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pensee T. Do whose telephone number is 571-272-0819. The examiner can normally be reached on Monday-Friday, 7:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Pensee T. Do
Patent Examiner
June 24, 2004


LONG V. LE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

07/26/04